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Address of the Retiring President of "The Association of Medical Superintendents of American Institutions for the Insane."

BY
DANIEL CLARK, M. D.,
TORONTO, ONTARIO.

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ADDRESS OF THE RETIRING PRESIDENT OF "THE
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BY DANIEL CLARK, M. D.,

Superintendent of the Asylum for the Insane, Toronto, Ontario.

GENTLEMEN—My accomplished predecessor in this chair told you last year how great had been his difficulty in selecting a subject for his retiring address, on account of the able treatment of almost all topics in the line of our work by previous presidents of this Association.

This task of selection has been greatly increased in my case, seeing that his masterly effort is now added to this symposium of the past.

After looking the field over it has seemed to me that it would not be unprofitable to discuss for a brief time the doctrines of the two great schools of thought which stand to-day in antagonism to one another in respect to the relationship of mind and body, and to endeavor to find out if they have not, to a large extent, much common ground over which no controversy should take place.

It is evident to me that there is much confusion in respect to definitions, and less in respect to interpretations of phenomena. I need scarcely say that this subject is germane to our work in the care and treatment of the insane.

If insanity be a fixed physical disease, which affects and controls abnormally the language and conduct of the individual, then is aught appertaining to mind and its organ of paramount

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importance to us. We judge of insanity by its abnormal mental manifestations, yet we treat it through physical conditions; hence the importance of studying psychiatry in relation to mental physiology. Every thing connected with the life history of the individual is a matter not only worthy of our study but is necessary to a successful prosecution of our work among the insane.

Sanity must be put in juxtaposition to alienation, in order to enable us to measure the mental standard of any man. It is a matter of comparison and relationship.

We cannot know what is abnormal unless we have a normal standard to go by, although, philosophically speaking, there is no abnormality in nature anywhere, as everything is under the reign of law.

Throughout the centuries a verbal war has been carried on, over the relation which mind and body bear to one another, and what influence one has on the other; there have been two sides to the shield, and each disputant has claimed that his field of vision is the only correct area of primary investigation.

The pendulum of speculation has swung from one extreme point of a segment of the great circle of truth to the other. It has scarcely ever halted in its transition movements at the mean between the two farthestmost positions of antagonism.

It has been ever thus in all the fields of varied controversy. The duality of man in one form or another has been an accepted doctrine from the earliest period of human history.

The prevailing conception among the lower races, including even most of the ancient Greek philosophers, and the early Christian fathers, was that body and soul were two material substances of different degrees of density, and with different qualities of existence.

In the days of Socrates, Plato, Xenophon and Aristotle; among the later Christian fathers, especially since the days of Augustine; by the schoolmen, and up to the present day, it was and is held that man is either a dualism of mind and body or a trinity of spirit, soul and body—the former opinions meaning simply that body is a gross form of matter, and the latter that mind is a substance but not matter; the former as being tangible and visible, and the latter being an entity having none of the properties of matter except existence, and possessing neither primary nor secondary qualities.

In the latter days an old theory has been revived by modern physiologists, which is simply that all is matter, mind is only a secretion or a function of nerve activity, nerve action being causal, and mentality being the effect. The materialistic physiology of to-day insists upon the doctrine of monism, inasmuch as the whole man is only matter, and psychic power one of its manifold manifestations. This view led Fichtè, Spinoza and their school into pantheism; the Divine mind and man's not being analogous, but identical; and so matter was God and God matter. This pantheistic idealism is boldly stated in Shelly's "Queen Mab:"

"Infinity within, Infinity without,
Belie Creation.
The inexterminable spirit it contains
Is Nature's only God."

Upon this doctrine of unity foreshadowed by Lucretius in his wonderful poem "De Rerum Natura," and by Plato before the Christian era, is founded the monistic doctrine of Carpenter, Herbert Spencer, Darwin, Huxley, Romanes, Maudsley, Beale, Lewis and Tyndall.

It is interesting to note the history of these great movements of thought, and to see that after all, so much that is called new is only old opinions considered from new standpoints. The old writers labored among metaphysical speculations, and the latter based their opinions upon physical phenomena. It is worthy of observation in the history of psychology how extreme views not only were in antagonism throughout the centuries, but how they also came into juxtaposition at certain points of their history.

We can correctly label the landmarks of human history simply from a knowledge of the schools of thought in the various epochs of man's progress. This is the age of a renewed form of materialism based on biology, instead of existing in the shifting sands of metaphysical subtlety. At this hour, on the other hand, a school of thought exists which denies that brain functionates all mental processes. It denies that the personal I is only a congeries of functions, whose fountain head is a nerve molecule or monad. In fact, it refuses to believe in the existence of matter altogether, except as a phenomenon of mind, and rules the material world out of being, except as a concept.

Stallo, of Cincinnati, in his able work on "Concepts of

Modern Physics," voices the opinions of these modern thinkers and treats with scorn the doctrines of modern physiologists in respect to mental phenomena in relation to gross matter.

This is seen in such opinions as the following, viz: "Neither mass nor motion is substantially real, but both are concepts or rather constituents of a concept matter. They are ultimate products of generalization. Matter is the *summum genus* of the classification of bodies on the basis of their physical and chemical properties. It is not, therefore, a real thing, but the ideal complement of two attributes, belonging to all bodies alike," (page 149.) This school sneers at what is called the atomo-mechanical theory of Tyndall and Huxley, in which is the Lucretian idea that "matter has in it the promise and potency of every form and quality of life;" in which is also an old idea of Bacon and Schelling. The latter says "Matter is the general seed-corn of the universe, wherein every thing is involved that is brought forth in subsequent evolution."

Stallo says that these mechanical theories "take not only the ideal concept matter, but its two inseparable constituent attributes, and assume each of them to be a distinct and real entity," (page 150, *supra*.) The one class of thinkers knows of nothing but matter and its manifestations, and the other has no conception of anything but mind and its operations, or, as Hegel puts it, "All things are evolved from Being and that universal being is wholly devoid of attributes." As was said in the days of Locke and Hume, one reasons away mind, and the other matter, so we have nothingness as a resultant, and as a corollary they leave to us an alleged concept to which they give the term Zero, or nothingness.

These are the doctrines of philosophers, and yet they do not occupy permanently the wards of hospitals for the insane. Here we have man on the one hand as a mere automaton with nerve ganglia as the supreme cause of psychic life; all mental phenomena being *per force* the resultant of nerve causation. On the other hand it is asserted that there is nothing but a void in the universe, or, at best, only mentality. The former makes sensation, volition, emotion, consciousness, and moral judgment productions of nerve vitality. The latter makes these mental phenomena the sum total of existence. By the former spontaneity of mind is believed to be a phantasm of metaphysicians.

Man is ruled by the external influences, from the thralldom of which there is no manumission, being, as Emerson would say, in "the hands of the cherubim of destiny." By the latter it is stated there is no world except a unit of mental activities.

I remember when I was a young man at college reading the controversy which was going on at that time on the theological dogma of predestination and free-will. I got hold of a work of Jonathan Edwards "On the Will." His work is a marvel of metaphysical logic to prove that man had no free will, but was guided in all his actions by the influence of what he called "external motives." Man had no spontaneousness of will, but was of necessity innately created for good or evil. He was good enough to say that we had our life history modified very much by education, experience and what we now-a-days call "environment." In spite of these sunny glints we were doomed to weal or woe because of want of volition; that is how I remember this remarkable book. One of his opponents gave the example of a man standing hungry and wistful between two loaves of bread of equal appearance and attractiveness. The external motives being equal and there being no free will to choose either of them, the man must of necessity starve to death in the midst of plenty. The opponent to Edwards' doctrine of fatalistic necessity fairly argued that the man would soon break through these so-called equal attractions with a spontaneous alacrity which would astonish the New England divine. There was hunger urging and bread was wanted to allay it, so no mere equable external attractiveness would hinder prompt choice of one of the alternatives.

Even Tyndall is forced to say "We are woven by a power not in ourselves." Haeckel is forced to say that "Organization is a result of life." Then is life an entity antecedent to its work and does exist independent of it. If that be so in the more primitive chemical as well as the vital forces, then why deny it in the psychic force, seeing it is more complex than these and has in its manifestations new elements of a higher order than aught below it in the scale of being? The contest is over the definition of I. The monist vehemently asserts that all nerve action or function means the living I, yet he acknowledges its existence as an agent antedating the organ which creates it.

This seems a contradiction in terms, making both effect and cause, or sequent and consequent identical. Herbert Spencer is

forced reluctantly to admit, (Biology, page 167,) that "It may be argued on the hypothesis of evolution, life necessarily comes before organization. On this hypothesis organic matter in a state of homogeneous aggregation must precede organic matter in a state of heterogeneous aggregation. But since passing from a structureless state to a structured state is itself a vital process, it follows that vital activity must have existed while there was yet no structure; structure could not else arise." Lionel Beale says, (Bioplasm, page 209., Ed. 1872,) "The vital power of the highest bioplasm in nature is the living I." Darwin calls this creative power "innate" in defining life. Lewis in his "Physical Basis of Life" holds the same view, as well as does Bastian in his work, "The Brain as an Organ of the Mind." The whole of his school of thinkers acknowledge an agent which must have an existence anterior to its work of organization.

The egoist on the other hand declares that there is an entity called mind, affected by, but not being gross matter, although in intimate relation to it, and capable of exciting it to action in will, emotion or desire. He appeals to our consciousness for proof of our power at will to produce physical effects by exercising volition, and stirring to intensity the affections, not as a secondary but primary cause. He holds that these efforts are initial, and are not primarily sensational in all mental activity.

In such a simple act as that of raising my arm consequent on a volition, if the primary impulse is a command of the nerve molecules to do so, something gave them the hint that this illustration was required at this opportune moment. I am told that my will to do so, is only a function of these molecules, and can not be at any time an initiatory impulse. In some mysterious way they got to know that this movement was required at this particular time. In other words, it is necessary in every volition to suppose a goading primary sensation and consequent reflex action from the power developed. It is held the same is true of memory and the wildest flights of imagination. My will, imaginings, reminiscences and consciousness, are all said to be the *result* of acts of the brain, which determines in an autocratic way their intensity, kind and variety, being amenable to no motive power higher than itself and the laws by which it operates. The I in its multifarious states and activities is merely molecular brain action and is not a personality but a congeries of functions.

Mental activity thus becomes a sequence of antecedent brain mechanism, and that the result of sensational experience.

The wild impossibilities of Milton—the creations of Shakespeare—the word picturings of Homer, Tasso, Dante, Scott and Longfellow—the wonderful combinations of Mendelssohn, Handel or Mozart, are only fortuitous presentments of a molecular grand jury, knowing no master *ab extra*, receiving no promptings but through sensation, and heeding no dictation independent of themselves.

As Sully puts it in his "Outlines of Psychology:" "The discussion as to what mind is in itself passes on to that of the relation of mind to its foreign companion, a material organism; and the attempt to interpret the fact of the concomitance between the physical and the psychical has necessarily involved a consideration of the question what mind is as substance. But sometimes the one, sometimes the other question has assumed special prominence." It has been suggested that the properly psychological study of the mind has no tendency to reduce mental phenomena to terms of matter and movement. The fundamental modes of mental manifestation, feeling, knowing, and willing, and the laws which govern their development, are perfectly distinct from the phenomena and laws of the material world.

With respect to the connection between body and mind physiological psychology is in a fair way to make out that all psychical activity has as its concomitant some mode of physical action. Mental life is thus a chain of events, parallel to another chain of physical events. More particularly mental life coincides with certain active central portion of the nervous series, namely, cerebral processes. Are these series independent of one another, or is there any causal connection and interaction between them? Is the psychical event the result of the first stage, sensory stimulation? On the other side, is the mental process a condition of the final stage, the muscular action? Or is this a case of mere parallelism without actual causal contact?

These questions have not yet been answered by accepted scientific methods. The physiologist setting out with physical phenomena as his realities and following the familiar methods of physical science, is disposed to regard the chain of nervous events as complete and self-explanatory, and to view the accompaniment of consciousness as an accidental appendage or "collateral re-

sult" of the physical events. On the other hand, the psychologist setting out from the inspection of the internal series of psychical events maintains that these are at least as real as the physical processes, and cannot be brought under the general effects of physical action; also that they must be included as co-operant factors or agents in the whole complex series. It would thus appear that in the concomitance of the physical and the psychical we have a unique fact not to be explained by being brought under the interpretation of ordinary laws of physical causation.

The insolubility of this question by commonly accepted scientific methods, and the double way of approaching its solution, are clearly illustrated in the different philosophical theories propounded to meet the case. On the one hand, we have as the earliest attempt to solve the mystery, materialism, or the doctrine that the material body is the only existent substance and active principle, and that what we call the mind is an effluence from, or product of, the activity of this substratum.

Over against this tendency we have Spiritualism, or the doctrine that the material is relatively dead or inert and unreal, and that the principle of life and activity is a spiritual principle. The materialistic tendency allied itself to a mechanical view of nature, which seeks to reduce organic life to the effect of mechanical arrangements. The spiritualistic tendency, on the other hand, led rather to a theological view of nature, to the theory that so-called inanimate objects are vitalized by a principle which involves purpose or end. Besides these tendencies acting singly we have combinations of them which aim at giving equal substantive reality and power to the material and to the mental or spiritual. The first crude form of such a combination is Dualism, according to which two co-ordinate substances exist side by side, but exert no influence one on another; the appearance of interaction being due to a Divine arrangement. Finally the desire to meet the claims of each of the two connected terms, and at the same time to account for their connection or union has given rise to the doctrine of *Monism*, according to which the material and the mental are related as two attributes of the same substance, or as two aspects of one reality, like the convex and concave sides of a mirror.

This accepted monism asserts that the mind or *psyche* of man has developed together with, and as conjoined functions of, the

nerve masses. The human mind or the mental capacity of the human race has developed gradually, step by step, from the minds of the lower vertebrates, being the same in kind if not in degree. There is no such thing as "free will" in the usual sense. On the contrary, in the light of this monistic conception of nature, even those phenomena which we have been accustomed to regard as most free and independent, viz: the exercise of the human will, appear as subject to fixed material laws as any other natural phenomenon. Indeed, each unprejudiced and searching test applied to the action of our "free will" shows that the latter is never really free, but is always determined by previous causal conditions, which are eventually referable either to heredity or adaptation, or repetition or automatism.

Hypothesis is, of course, not science, though it seems as if scientific men sometimes think that it is. It may be reasonable and likely, but if large portions of the laws of phenomena which it ought to include are inaccessible, by reason of time or space, or want of opportunity, it is beyond the domain of science. It cannot be employed in argument, and has no validity as against ascertained facts, which no such interpretation of phenomena can fully solve. The well known rule that if a hypothesis explains all the phenomena, then is it probably true, is not applicable where there is only partial solution by its assumption. These master thinkers founded their opinion on the asserted facts of biology, especially embryology. Comparative anatomy, vivisection, physiological development and pathology all do duty in this direction.

The growth of body and mind based upon environments, functional necessities, inherent aptitudes and selective powers arising from the necessities of existence, are presented as proofs. They study mind and body from three radical sources:

(a.) In what is observed by the observation of our physical system, in function, during health and disease; by the use of drugs in their well known selective effects on different parts of the nervous system, and by experiment on the living lower creation.

(b.) In the study of the actions, words, habits and apparent motives guiding the reason and will in other human beings constructed as we are, in physical mechanism, and obedient to the same general laws of existence.

(c.) The introspection of states of consciousness and the study of their conditions in relation to the *ab extra* world. These subjective and objective phenomena are noted and classified, and as a result it is held that not only does all evidence go to show the intimate relationship which exists between mind and body, in health and disease, but also that there is no reason to believe that mind is a distinct essence, but rather a resultant of nerve energy made manifest as psychic force. In other words, it is only a function or secretion. There is nothing except body and its qualities. In the somatic theory of Cabanis this doctrine is put in one sentence: "All intelligence consists in sensation, and all sensation resides in nerves; as the liver secretes the bile, so does the brain secrete thought."

There is no mind at birth, says Bladford in his lectures on insanity, and all knowledge can be reduced to sensation. Locke held that mind existed at birth, but that it was as a sheet of white paper, with no mental impressions on it, or as he states, "no innate ideas." Strange to say, this doctrine of negation of ideas, coupled with the assertion of the opinion that there was an existence which had ideal potentiality in the initial stage of extra uterine life, yet possessing no definite mentality, held sway over the minds of metaphysicians of Britain and America for many years, until Sir William Hamilton took up the cudgels against this view. A great deal of misunderstanding has arisen in connection with this and kindred subjects because of want of exactitude in the use of terms. Logomachy is constantly going on over differences in the meaning of the words used in the discussion of abstruse and scientific subjects rather than over essential facts of controversy. The word mind is one of these terms. In its widest sense, as understood among the ancients, its synonym, *psyche*, was meant to include in the term all things living, from the most simple plant to the greatest philosopher. The thistle has soul as well as the body of a living Socrates. This definition was much more expansive than is that of the theologian who knows of no spirit except in man, and who divides up man only into soul, spirit and body. Of course, this tripartite division was necessary in order to bring his terms into line with his exegesis, which gives man and beast two distinct entities in common, but adds soul or spirit in its summary of the intellectual and moral endowment of man. To doubt this

statement would expose us to the condemnation of that class of interpreters who sees in such hermeneutics what is called "the higher criticism," and looks upon the division into duality as rank heresy. To such the generic term mind has no significance in the strict physiological sense of that term. The dualist scouts the idea of such a triumvirate of forces in man, and reduced the number to two, namely, that of mind and body. One class of thinkers believes the mind to be a non-material something, and has no doubts about the existence of the gross matter of the body being the medium in which it manifests itself. The other class teaches that mind is a subtle form of matter, in short, a higher form of that ascending series of material forces which begins with chemical action, then cell life, then vegetable life, then organic life, then psychic life. They deny that these correlate, but only acknowledge that the higher manifestations depend on the lower in a subsidiary way, and not as a necessary condition of existence. The monist puts this theorist in the witness box, and asks for solutions of facts in experimental physiology, in pathology and in natural history. Such take the form of presentation, which is seen in the correlation of force in chemical affinity, motion, light and electricity. They do not claim, nor can it be proved that the correlation is entirely interchangeable or precisely convertible as in chemical action, but insist that the same general law is in force along this line of operation as between mind manifestations and organic activity and *vice versa*.

With Maudsley we are to put memory in every molecule, and consciousness as being only the recognition by a molecule of the influence of sensory impressions; like Carpenter we put volition in nerve tissue wherever found, or to use his own terms, call it "a function of the supreme centers," or designate will to be merely "a result of organic changes in the supreme centers." Like Tyndall, we will call the ego "a poetic rendering of a phenomenon which refuses the yoke of ordinary physical laws." The same opinion is given by Voght.

Moleschott says: "Thought is a motion of matter." Buchner says that "the soul is a product of a peculiar combination of matter—thought is emitted by the brain as sounds are by the mouth, or as music is by the organ."

Luis, in "The Brain and its Functions," puts the matter

thus: "All spontaneity, all proper activity, all free-will, is thus set aside, the voluntary act being nothing more than the reaction of sensibility. It is sensibility which, being everywhere present and everywhere vibrating, inspires our words, our writings, our acts, following the instinctive appetites which determine its attractions and repulsions. Personal interest is the sole motive of human conduct, the all-powerful magnate which guides it; self-devotion is but a disguised form of egoism. It is easy to imagine what the personality becomes in such a system. The unity of the ego is nothing more than the accord into which all outward stimuli are automatically attuned, when, after traversing the series of connected cells forming the *cortex*, they reach the common *locus* which acts as a great receiver-general. This receiving area, localized in the region of the *corpora striata* and *optic thalami*, may be called the *sensorium commune*. Past and present stimuli are blended in this living receptacle; it is like an animated piano which harmonizes all its tones into one accord."

Maudsley arrives at the very same conclusions. To him mind is only a generalization, a metaphysical abstraction of the nervous and cerebral phenomena. Mental activity depends absolutely on the structure and nutrition of the brain. The history of intelligence is identical with that of the nervous system; it is in exact relation with the cerebral convolutions. The differences between man and the animal are in exact correspondence with the development of the physical organ of thought. The unity of the consciousness is explained by the union of the two cerebral hemispheres. The *ego* is nothing more than the unity of the organism. Further, consciousness is not the essential factor of mind, it is only a secondary attribute. The nervous centres are the seat at once of the ideas, the motions, and the will, without there being any necessity to attempt a definite specialization of the various modes of cerebral activity in the cortical layers. The activity which begins in the posterior convolutions, communicates itself to the anterior, where it is transformed into acts and words. Maudsley concludes by congratulating himself on having succeeded in altogether eliminating internal experience, so as to arrive at the true facts of consciousness. Dr. Bastian, in his last chapter of his book on the brain and mind, affirms that intelligence ought to pro-

ceed from the organic life; otherwise we are compelled to leave the simple natural way, and to admit a supernatural element, that is to say, to proceed on another principle than simple natural development, which is always purely physical and mechanical. It is true that the author recognizes that the experimental proof of this *processus* is still wanting, and he formulates his conclusion as a sort of postulate.

We can easily imagine how, following in the steps of the eminent physiologists, and taking advantage of their great labors, without investigating them, the daring popularizers of materialistic doctrines vaunt in tones of triumph their assertions of the identity of the brain and thought. "The organism is the man himself," says M. Andre Lefevre. "Intelligence is the result of organic phenomena. Consciousness begins only in an annular protuberance, in which the *fasciculi* of the *medulla* meet." "The grey matter of the cortex," says M. Letourneau, "is the conscious and thinking part; thought is only a function of the nervous centres." Edmund de Pressencè protests against these actions and says: "We have a brief refutation to offer to these sweeping assertions of materialism as to the close connection between mind and the brain. First of all, we dispute the conclusions drawn from purely physiological experiments, even when perfected by the fullest aid of vivisection. 'Physiological experiment,' as is well said by M. de Broglie, in his book on Positivism, 'is always brought to bear on the instrument of the mind, and on that instrument alone. Neither the mind—in the most materialistic conception of it—nor its operation is ever revealed by the scalpel; it is perceived solely by internal observation, which differs *in toto* from external experiment. The latter, moreover, can only be applied to the brains of animals, and to these only in a dead or inactive state. To say that the brain thinks because a certain correlation is observable between thought and the physical condition of the brain, is to demand from external experiment that which it is not competent to give; for thought, by its method and essential nature, eludes it.' Internal phenomena, from their very nature, cannot be either seen or touched; the scalpel and the microscope alike fail to reveal them; they can only be perceived by one faculty—consciousness."

As Du Bois-Reymond says, on the other hand, "the anatomical

knowledge of the brain, the highest knowledge we can attain, reveals to us nothing but matter in motion. But if we suppose that from this knowledge certain intellectual processes or dispositions, as memory, the association of ideas, and so on, might become intelligible, that too is delusion; we only learn certain conditions of intellectual life but do not learn how the intellectual itself is developed from these conditions. What conceivable connection exists between certain movements of certain atoms in my brain on the one hand, and on the other the, to me, original and not further definable but undeniable facts, 'I feel pain, feel pleasure, I taste something sweet, smell roses, hear organ tunes, see something red,' and the just as immediately resulting certainty, 'therefore I am?' Is it possible to see how, from the co operation of the atoms, consciousness can result. Even if I were to attribute consciousness to the atoms, that would neither explain consciousness in general, nor would that in any way help us to understand the unitary consciousness of the individual." In the conclusion of his chapter on "Force and Matter," after reviewing the atomic theory, Langè says: "In the present state of the natural sciences matter is everywhere and unknown, force the known element. If instead of force we rather talk of a 'property of matter,' we must beware of a 'logical circle.' A 'thing' is known to us by its properties; a subject is determined by its predicates. But the 'thing' is, in fact, only the resting place demanded by our thought. We know nothing but properties and their concurrence in an unknown something, the assumption of which is a figment of our mind, though, as it seems, an assumption made necessary and imperative by our organization."

The fact is, it is unthinkable to suppose organization without taking it for granted that an organizing force antedated it. This is not only true in our conception of organizable and organized matter from the protoplasm and protozoa upwards to man, but it is also true in chemical union, which is one of the simplest forms of manifested force. I take a tumbler of distilled water and dissolve in it several salts, say, alum, Epsom salts and saltpetre, which form large crystals. The moment they are dissolved they disappear beyond the reach of vision by microscope or spectrum analysis, while dissolved in the fluid. We know we can bring back to vision every molecule and every monad by evap-

oration.. If a piece of glass is dipped in this saline solution and what adheres to it is allowed to dry, crystals are being formed on its surface, as evaporation goes on.

While this process of formation is going on let us use the oxy-calcium or electric light and with a magnifying glass throw the shadows of the gathering crystals on a screen. We will then see the particles of matter begin to take definite shapes, each according to its kind without confusion. As if an army had been scattered and orders had been given for each company, each battalion, each regiment and each corps to gather together at its respective headquarters. When the rendezvous of each has been reached every particle takes its appropriate position in the ranks and the result is, that without an error each salt will form the crystal which is inherent to it. The facets, the angles, the general shapes of each are so well known by the study of the laws of crystallization that the kinds of minerals are recognized at once. This reign of law as manifested in non-living matter is wonderful; we may call this force, *cohesion*, *polarization*, or what we may. It is universal in nature and without it there would be chaos.

The very law which moulds a tear,
And bids it trickle from its source,
That law commands the world a sphere
And guides the planets in their course.

I never looked upon this silent force in operation but with awe and wonderment. Endeavor by any process of reasoning to think of mere force in the abstract, and we fail. Not only so, but force must be associated in our minds as being chronologically antecedent to the definite formation of matter. We cannot have formation of matter without antedating the agent. The worker must exist before the work. We carry our minds backward in imagination to the ultimate elements of matter, yet, this idea will cling to us with axiomatic force.

Lucretius got over this difficulty by holding the doctrine that matter was eternal; force was also everlasting; mind was a subtle combination of force and matter, and of necessity had no beginning and could have no end. Seeing that unending duration was an essential condition of all existence, hence, the logical conclusion that mind was according to this law of nature immortal. In this view force and matter could not antedate one

another. They were of necessity coterminous. Take another illustration. I put different kinds of seed into a box of earth, of uniform fertility. The same heat is applied, the same water, and the same sunlight. The materials from which each seed draws its food are the same. The seeds sprout; they throw out their rootlets; they select from this storehouse of nature what is specially needed, according to the nature of each. The result is, that the fibers of the stems, the shape of the leaves, the petals, the coloring, and the properties of each are as varied as the seeds, each according to its kind. The vital principle in each is different, according to species and genera. This selective and building up force which is so familiar and yet so wonderful has the chemical union as a basis, but it has taken a much higher step in variety and complexity. These more skilled workers, although for the time latent in the seed, have all the potentialities of the flower or the mighty tree in them although undeveloped. The vitalizing power was *in esse* before the structure had taken form.

Take another illustration. I have taken my dinner, composed of a variety of dead matter. It has gone through a chemical process of digestion. The glandular laboratories have changed the chemical into vital bodies in the blood corpuscles. Did the process of organization stop here, we would die of inanition. The thousand and one workshops in each body have master builders in them who are crying out for material. No two manufacturers carry on the same kind of work. The arterial stream carries in it the needed raw substances and each organ takes out of it only what is wanted for its distinctive structure. Each organ has its own peculiar cell which will seek for nothing but what it wants. From the lung cell to the liver cell; from the cartilage cell to the bone cell; from the muscle cell to the fat cell, and from the lens cell to the brain cell are created structures, different in histological construction, in functional activity and in growth renewal. This is a great step in advance of chemical union and of merely vegetable life. The differences between the varied organs of our bodies are far greater than is evident in the world of nature below them. There is, however, one common bond of union in the nerves and the ganglia which brings about harmony of action in this community of interests. It will be accepted without controversy that a subtle force was not only contemporaneous with, but was the creator of these organisms.

and stamped upon each its function in the animal economy. Muscular activity, secretion, excretion, structural power and necessary decay go on night and day under the dominion of this residuary force, which called specialized functions and organs into being.

So far there are manifest three active agencies in this ascending series of existences, interdependent upon one another. All agree so far as organs and functions are concerned, as we have had gross matter merely to deal with in ever changing forms, but obedient to law. These substances have primary and secondary qualities. They have density, gravitation, extension, divisibility, figure, occupy space, and such like properties which belong to matter in its crude form. We take a step higher in the scale of being, but in this we have no new material organisms. We come in contact with forces, powers, faculties and states of being, which seem to have nothing in common except existence with this gross molecular world, which thus far has been presented to our senses. We give these new forces the names of instinct, feeling, volition, reasoning, imagination, memory, emotion, attention, reflection, consciousness and such like. To a greater or less extent we find these wonderful powers, conditions and faculties resident in all nerve substance. They seem to have no qualities in common with gross matter, and yet they are cognitive entities. None of them can be weighed, nor divided, nor measured, nor made tangible, nor tested by chemists, yet we know they are in existence as surely as we know we live. What are these startling phenomena which are, at this stage of development, interjected into nerve substance?

Now comes the battle of opinions, *pro* and *con*. And from the days of Lucretius, down to the latest idealist, the diverse opinions have raged, now on one side, now on the other. In the later days biology has entered into the controversy, and with it agnostic physiology, which knows nothing and acknowledges nothing beyond what is seen or inferred in the natural phenomena of gross matter. It cannot put into the usual formulæ the attributes of these mental existences, so it classifies them as functions of nerve substance. It is chemical force plus vegetative force, plus vital force, plus mind as a resultant finale of all combined.

Simply this and nothing more. This contest is largely

focalized on what is meant by consciousness. If it can be shown that consciousness merely consists of sensational impressions and as fleeting as they, then must its evidence be unsatisfactory. If it is simply a series of perceptions, memorized then is it self outside of self looking at self, which is contradictory. If it is simply mental acts, then has it no abiding and continuous existence. If it is a faculty, then it is only a function of brain and dependent upon this organ for its very existence.

Auguste Comte says: "It is out of the question to make an intellectual observation of intellectual processes; for the discerned and discerning organs being here the same, its action cannot be pure and natural. In order to observe, your intellect must pause from activity; yet it is this activity that you want to observe. If you cannot effect the pause, you cannot observe; if you do not effect it, there is nothing to observe. Comte's Positive Philosophy led him to believe that consciousness is a faculty or a succession of perceptions, when in truth it is merely a *state* of mental existence. The positive school of Comte scouts introspection and dogmatically adheres to purely objective methods of research. Even Herbert Spencer is forced to give up sensation as the only source of knowledge when discussing consciousness, although he evidently does so with reluctance, as did his co-laborer, John Stuart Mill, in his theory of "The Association of Ideas."

Spencer says: "There must be a residuary consciousness of something, and this indefinite something constitutes our consciousness of the non-relative or absolute. Impossible though it is to give to this consciousness any qualitative or quantitative expression whatever, it is none the less certain that it remains with us as a positive and indestructible element of thought. The momentum of thought inevitably carries us beyond conditional existence to unconditional existence; and this ever persists in us as a body of a thought to which we can give no shape, and transcends not only human knowledge but human conception." Here he gives up the physiological idea of the monistic school, that sensation is the sub-stratum upon which all human knowledge is based, and with it the theory of mechanical evolution is abandoned. In other words he cannot ignore what Sir William Hamilton calls the idea of "The Unconditioned," namely, the conception of space, duration, and continuity in which is no sensation as a primary condition.

As David Hume would say, consciousness is "the original furniture of the mind," and not a secondary product based on sensation. These concessions are important when they are made by those who see nothing but a physical basis for mind, and who hold body and mind to be merely cause and resultant. They cannot shake themselves loose from these problems of mental introspection and continuity. They felt that sensation alone, however multifarious in its receptivity, failed to explain all the enigmas of psychic life. Elements of combination, of unending synthesis in which, as such were no previous sensational experiences, must have an abiding nature as evident to our experiences in subjective life, as are the phenomena in the *ab extra* world which are presented to our senses and recognized by us only inferentially. As Goethe puts it:

"Who of the living seeks to know and tell,
Strives just the living spirits to expel.
He has in hand the separate parts alone,
But lacks the spirit bond that makes them one."

Consciousness remains with us during all the mutations of our physical system. In that time millions of brain molecules have grown to maturity—produced their like—and having become an excretion, are cast out as useless dead drones from the busy hive in the ambulances of nature. Each parent monad has left to its child a legacy and a biography of the past. Each succeeding generation has garnered permanent and "setting" impressions to be harvested and appropriated by the living tenant as emergencies arise. The older the facts of memory in childhood the more vividly are they portrayed in the vast picture gallery of the brain. The molecules change in substance and possibly in contour, as do the other parts of our physical system. Every impression, mental or physical, makes a fixed change in the ultimate elements. From this storehouse, at will or by association, the past is brought up to mental view with all its varied experiences. The instrument is ever changing in essence and capability during revolving years, but consciousness remains true to its impressions in spite of these disturbing transitions, and even of much organic lesion. What hypothesis can consistently explain this, if our consciousness were only a function or a secretion? No wonder that Maudsley takes every opportunity to have a tilt at it, and calls it only an "indicator"

to tell what the molecular agent is doing, for if it be a state taking cognizance of the conditions and acts of the ego, or rather the ego itself acting in a cognitive state, such a living fact would strike a fatal blow at the substratum on which is built the doctrines of the school of Comte.

Professor Huxley says justly: "Nobody, I imagine, will credit me with the desire to limit the empire of physical science; but I really feel bound to confess that a great many very familiar and, at the same time, extremely important phenomena, lie quite behind its legitimate limits. I cannot conceive, for example, how the phenomena of consciousness, as such, and apart from the physical process by which they are called into existence, are to be brought within the bounds of physical science. Take the simplest possible example, the feeling of redness. Physical science tells us that it commonly arises as a consequence of molecular changes propagated from the eye to a certain part of the substance of the brain when vibrations of the luminiferous ether of a certain character fell upon the retina.

Let us suppose the process of physical analysis pushed so far that one could view the last link of this chain of molecules, watch their movements as though they were billiard balls, weigh them, measure them, and know all that is physically knowable about them.

Well, even in that case we should be just as far from being able to include the resulting phenomena of consciousness, the feeling of redness, within the bounds of physical science, as we are at present. It would remain as unlike the phenomena we know under the names of matter and motion as it is now."

Huxley sees no way to span the unknown chasm between physical activity and mentality, yet many of his followers lightly trip over it and describe the way with exactitude and dogmatic assurance.

The same differences of opinion exist in respect to the formulation of our moral judgments. The generic name of conscience is given to this faculty of the mind. By one class of thinkers this ethical power is said to be instinctive, and is capable of judging intuitively of the value of human motives and conduct by the *rightness* and *wrongness* of acts. This power is said to be inherent in the human mind, and is unerring.

in its verdicts in respect to the moral qualities of human actions. In fact, it is said to be "God's vicegerent upon earth."

Wayland, Paley, Alexander and other authorities of the theological school, cling firmly to this view, and imagine that were this foundation stone removed, sin, choice of action, and responsibility, would be myths, and moral chaos must of necessity follow.

The alarm is not unreasonable were these deductions of the theological school self-evident and conclusive. On the other hand, Darwin sees no congenital faculty in conscience. In his "Descent of Man," (Vol. I, page 68,) he says "that any animal whatever, endowed with well marked social instincts, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well developed, or nearly as well developed as man."

Haeckel in his "Evolution of Man," sees no moral in this little world of ours. He says with emphasis that "the moral ordering of the world is evidently a beautiful poem which is found to be false by actual facts. It exists neither in nature nor in human life, neither in natural history nor in the history of civilization. There is no such thing as 'free will' in the usual sense. On the contrary, in the light of this monistic conception of nature even those phenomena which we have been accustomed to regard as most free and independent, such as the expressions of the human will, appear as subject to fixed laws as any other natural phenomena. In short, each unprejudiced and searching test applied to the action of our 'free will' shows that the latter is never really free, but is always determined by previous causal conditions which are evidently referable either to heredity or adaptation." By one fell swoop, free will and moral distinctions are swept away and mechanical law is put in their place. Mental spontaneity, ethical judgments, and the data of consciousness are sequents of blind force, from whose thralldom there can be no appeal, as conscience, moral obligation and volition, abstract ideas of infinitude in time and space, of number and form, of artistic conceptions and of our own identity and continuity are simply secretions, whose creator is living nerve tissue in formative operation.

Now, great as seem these differences, there is much common ground in all these definitions and doctrines which all could agree upon:



1st. Evolution is accepted if it includes revolution, that is, the protoplasm includes all the potentialities of subsequent change and diversity.

2d. There is a definite relation between brain cells and mentality; given the one, the other is present in corresponding strength and activity; just as the magnetic iron has magnetism in it in proportion to its weight, yet one is not of necessity a resultant secretion of the other.

3d. It may be possible that ethical powers depend in a large degree on environment, education and experience, as Herbert Spencer says in his "Data of Ethics," or it may be they are instinctive in a rudimentary way, and like intellect, are only in need of stimuli to bring them into moral activity. The writer of this monograph is convinced that moral judgments depend on the intelligence for evidence, in every step of their formation. The conscience is only a judge to pronounce verdicts according to the intellectual evidence presented, and is as likely to give wrong judgments as right if the intellectual presentment is false; hence it is a fallacious court of appeal unless true evidence is given. So it is that the man with an enlightened conscience is the highest type of humanity.

At the same time we find among our criminal classes many who have never had their minds drawn out to the highest appreciation of the grandeur and beauty of moral obligation. They may be educated, shrewd, cunning and in the ordinary acceptance of the term clever, yet no crime however heinous would cause them the loss of a night's sleep, or deprive them of appetite. They do not know what is meant by remorse. They have been well styled "moral idiots." On the other hand we have the Hindoo mother, crushing out the natural instincts and killing her offspring to appease the anger of some imaginary God. Her religious education has neutralized the natural affection of the mother, which in animal and man is the strongest of all passions. In the former, conscience was never developed, and in the latter custom has obliterated it or at least neutralized its potency, as nature had planted it in the mind of all well organized human beings. Examples of all kinds might be given to show how variable and unstable is the moral faculty of man in active operation. The mental structure is built up from sensation to ideation; from ideation to intelligence; from intelligence to reasoning; from

reasoning to the formation of moral judgments. We see in insanity how often the tearing down is in inverse order to the building up.

4th. Absolute free will is not to be found. We are "cribbed and cabined" in an organization which hampers our mental organization to a greater or less extent. Traits of character, such as temperament, habit, education and state of health give bias to our thoughts and impulses. This is conceded by both schools of thought. At the same time we are conscious of a certain amount of mental freedom which no reasoning, sophistical or otherwise, can deprive us of. A moment's reflection will convince us of possessing this power of spontaneity within certain lines of volition.

Pressencè, in his "Study of Origins," puts the other side of the question as follows: "That which is fatal, as it seems to us, to Herbert Spencer's whole theory as to conduct and the constant adaptation of existences to their environments, as applied to humanity, is the fact that humanity never maintains a fixed correspondencè between its stage of evolution and its intellectual development. If evolutionism were true, if man developed psychologically in his moral and physical nature in accordance with the principle of the conservation and transformation of energy, every stage of evolution reached should be permanent, there should be no possibility of retrogression; for progress having been produced necessarily by the operation of the laws which govern the universal mechanism, and by virtue of which man's brain is modified coincidentally with his mind, (mind being after all only a function of the cerebral organ,) we fail to conceive why a generation, or a whole people, having attained a fresh stage of evolution, should not invariably remain there till it was prepared for a yet higher stage. The adaptation has been spontaneous, the human agents have been only its passive instruments. How comes it then that they are constantly retrograding, and that their conduct is so habitually at variance with their social environment? In our day, this social environment in accordance with the law which resolves the homogeneous into the heterogeneous, and the heterogeneous into the complex and definite, is something immeasurably above self-asserting individualism. We are assured that we have arrived at the period of *altruism*, which subordinates the interests of each to

the interests of all, and yet every day we see individual interest insolently asserting itself and imperilling the social community. Whence the falls, these retrogressions? How can we explain the sorrowful saying, so often verified by experience, "*Video meliora, deteriora sequor?*" Let it be observed that these falls are now the fault of a few individuals, that there are whole generations and nations which fall back upon the dominion of sheer selfishness and violence. We recall the witty saying applied in the last century to the collective error of a great department of State: 'One horse may stumble, we allow, but a whole stableful at once—.' Such repeatedly recurring alterations of advance and retrogression in the moral history of mankind are surely a proof that conduct is not with man, as with the mineral, vegetable, or animal, a mere necessary and inevitable adaptation, but some thing in which his will comes into play. Determinism renders these fluctuations altogether inexplicable. It is equally opposed to that education of the conduct which the English physiologists admit. They seem to hold it possible to influence the destiny of man and of a nation by strengthening the action of certain motive forces, that is by the intelligent organization of the social environment. We confess that we do not understand how human intelligence can act upon this vast mechanism, of which it is merely one of the wheels. It may gradually come to work more smoothly by friction, after the manner of machinery, but it can have no power to change its nature in a world wholly subject to the inflexible laws of motion."

This whole subject is a matter of paramount importance to every student of man, either in health or disease. Strange to say, that intimately connected as man necessarily is with himself in his objective and subjective states of being, yet no subject of study has given rise to more diversity of opinion in all the range of human knowledge. This study must be of intense interest to us, who have to do with the mind in an abnormal condition, and we cannot ignore its claim upon our attention if we seek to be thoroughly equipped for our work. Pathology is important, but it is merely a study of ruins. Physiology is a great study, but it means observation of a machine in active operation. Mental alienation is an object of surpassing interest, and shows that this machine is out of repair and needs reconstruction.

But man in health is surely not less an important object of contemplation, and in a sound condition he is the standard by which we measure all deviation from normal condition in each person.

Such being the case, the writer has taken this opportunity to add his humble contribution to this vast subject. There are many in this Association who doubtless differ from him, being ardent followers of the so-called New Psychology, but he is sure that they will appreciate how convictions, come from whom they may, even if uttered by those who may be considered too conservative in their opinions, in this age of advanced thought.